

### **REMARKS**

Claims 1-22 are currently pending. With entry of this amendment, claims 1, 3, 13, 16, 21, and 22 have been amended, claim 2 has been canceled, and, thus, claims 1 and 3-22 are pending and at issue.

Claim 1 has been amended to recite the limitations of original claim 2. Claims 1, 13, and 16 have been amended to set forth that biofilm disintegration is observed at a concentration of chlorinated hydantoin in which disintegration is not observed using BCDMH under the same conditions. Support for this amendment can be found in Table 3 on page 13 and in Figures 3-5 of the application as filed demonstrating that both monochlorodimethylhydantoin (MCDMH) and dichlorodimethylhydantoin (DCDMH) disintegrate biofilm at 20 ppm (expressed as  $\text{Cl}_2$ ) whereas BCDMH (a mixture of BCDMH and methylethylhydantoin (MEH) was actually used in the experiments, however BCDMH is the biocide active ingredient) does not disintegrate biofilm at the same concentration. Support for the amendment to claim 22 can be found on page 4, lines 5-6. The remaining amendments correct for antecedent basis and claim dependency in light of the claim amendments and cancellations. No new matter has been added by way of these amendments.

### **“New Matter” Rejection**

Claim 22 has been rejected under 35 U.S.C. §112, first paragraph for lack of written description. The Examiner asserts that the recitation of “ballast water system” in claim 22 is not supported by the application as filed and is, therefore, new matter.

Applicants have amended claim 22 to recite that the method is performed in “a system subject to the growth of biofilms” as stated in the application as filed on page 4, lines 5-6. Since the amended claim finds support in the application as filed, Applicants respectfully request withdrawal of this rejection.

### **Three Obviousness Rejections**

Claims 1-6, 9-13, 16, and 19-21 have been rejected under 35 U.S.C. §103(a) as obvious over Hight (U.S. Patent No. 5,662,940) in view of Macchiarolo (U.S. Patent No. 4,297,224). According to the Examiner, Hight discloses a method for controlling microbial deposits by adding chlorinated hydantoin to an aqueous medium. The Examiner asserts that the method disclosed in Hight includes the disintegration of biofilms as claimed. The Examiner further contends that Hight uses BCDMH in Examples 1 and 2 and continues to assert that BCMH is a chlorinated hydantoin as set forth in claim 1. The Examiner characterizes Macchiarolo as teaching the utilization of chlorinated hydantoin to remove and disintegrate microorganism growth and biofilms from surfaces of water systems. The Examiner concludes that one skilled in the art would modify the teachings of Hight by disintegrating or removing biofilm or sludge as taught by Macchiarolo to prevent biofouling and contends that the specific amount of hydantoin added “would have been an obvious matter of process optimization...absent a sufficient showing of unexpected result” (page 3).

Claims 7, 8, 14, 15, 17, and 18 have been rejected under 35 U.S.C. §103(a) as obvious over Hight in view of Macchiarolo further in view of Sweeney (U.S. Patent No. 5,565,109). According to the Examiner, the teachings of Hight and Macchiarolo differ from the claims because the claims recite the in situ formation of chlorinated hydantoin, however the Examiner asserts that Sweeney discloses the same. The Examiner contends that it would have been obvious for one skilled in the art to modify the teachings of Hight and Macchiarolo with those of Sweeney to prevent biofouling.

Claim 22 has been rejected as obvious over Hight in view of Macchiarolo further in view of Perlich (U.S. Patent No. 6,773,611). According to the Examiner, the claims differ from Hight and Macchiarolo by reciting that the method of disintegrating biofilms can be performed in a ballast water system. However, the Examiner asserts that Perlich teaches that one skilled in the art would know to utilize a biocide to treat ballast water to control biofilms and concludes that it would have been obvious to modify the teachings of Hight and Macchiarolo to treat ballast water as disclosed in Perlich.



To address specifically the Examiner's assertion that Hight describes both the control and disintegration of biofilms, Applicants offer a Declaration pursuant to 37 C.F.R. §1.132 by co-inventor, Dr. Michael Ludensky ("the Ludensky Declaration"). Dr. Ludensky opines that Hight does not describe or suggest the disintegration of biofilms, but merely discloses the control of biofilms. See ¶¶ 8 and 11 of the Ludensky Declaration. Dr. Ludensky presents scientific literature as evidence that the disintegration and control of biofilms were distinct concepts and that only some biocides can disintegrate existing biofilms. See ¶¶ 9 and 10 of the Ludensky Declaration. Thus, contrary to the Examiner's contentions that "control would appear to include disintegration or removing of at least some of the biofilm" (page 4 of the Office Action), some biocides, such as the ones described by Hight, only control but do not disintegrate biofilms.

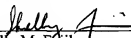
Thus, since (1) none of the references taken alone or in combination describe or suggest that a monochlorodialkylhydantoin, dichlorodialkylhydantoin or a mixture thereof could disintegrate biofilms at concentrations in which BCDMH could not disintegrate biofilms as recited in the pending claims and (2) Hight does not describe or suggest the disintegration of biofilms, the invention is not obvious over these cited references. As such, Applicants respectfully request withdrawal of these obviousness rejections.

**Conclusion**

In view of the above amendments and remarks, it is respectfully requested that the application be reconsidered, all pending claims be allowed, and the case be passed to issue. If there are any other issues remaining which the Examiner believes could be resolved through a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

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Respectfully submitted,

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